

Using this Guide

The guide begins with a sustainability plan template, consisting of a checklist, developers may use to identify their sustainable building strategies. Seattle Office of Housing strongly encourages developers to submit a sustainability plan with applications for funding.

Essential items are identified in bold. Some Action Items were identified by stakeholders as achievable and essential strategies for affordable housing projects. Items that were considered more difficult to achieve were listed as recommended strategies. The intention is to achieve as many positive benefits in each project as is realistic, while balancing other project constraints.

Following the sustainability plan template, six chapters outline the “why” and “how” of each specific Action Item. The chapters cover these six sustainable building areas:

1. Enhanced Design
2. Site & Water
3. Energy Efficiency
4. Health & Indoor Air Quality
5. Materials Efficiency
6. Operation & Maintenance

The range of strategies gives developers a variety of options to choose from that allow flexibility for rapidly changing technologies and practices. The City of Seattle encourages project teams to incorporate as many sustainable strategies as is practical to meet the basic guiding principles of the program. The guide also acts as a resource for information, methods, materials, vendors and related Seattle City programs. Resources and appendices are found at the back of the guide.

Sustainability focuses on desired outcomes that may require a series of building choices. Developers will make choices based on life cycle cost comparison of replacement components and long-range utility cost analysis.

SUSTAINABILITY PLAN TEMPLATE - CHECK LIST

| SEAGREEN SUSTAINABILITY PLAN TEMPLATE | | |
|---------------------------------------|-------------------------------------|---|
| CHECKLIST | | |
| Design Development | | |
| NEW | REHAB | ACTION ITEM |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 1-1 Essential: Submit Sustainability Plan Template. |
| | <input checked="" type="checkbox"/> | 1-2. Essential for Rehabs: Evaluate opportunities for deconstruction – systematic disassembly of a structure to remove and salvage usable materials prior to demolition. |
| | <input checked="" type="checkbox"/> | 1-3. Essential for Rehabs: Inspect for asbestos and lead prior to remodel. Abate as required. |
| <input type="checkbox"/> | <input type="checkbox"/> | 1-4. Site building(s) within 1/4 mile of mass transit and within 1/2 mile of stores and services. ★2-44 |
| <input type="checkbox"/> | <input type="checkbox"/> | 1-5. Preserve and create open space. ★ 2-7, 2-11, 2-43 |
| <input type="checkbox"/> | <input type="checkbox"/> | 1-6. Use efficient building footprint and maximize space efficiency. ★5-3 |
| <input type="checkbox"/> | <input type="checkbox"/> | 1-7. Site buildings for optimum access to natural ventilation. Design buildings to maximize natural ventilation. ★4-43 |
| <input type="checkbox"/> | <input type="checkbox"/> | 1-8. Site buildings to maximize solar access. Design buildings to take advantage of solar heating potential and daylighting opportunities. ★3-16, 3-17, 3-18 |
| <input type="checkbox"/> | <input type="checkbox"/> | 1-9. Design below-ground space for non-occupancy uses. |
| <input type="checkbox"/> | <input type="checkbox"/> | 1-10. Specify regionally manufactured building materials (within 500 miles). ★5-33 |
| | <input type="checkbox"/> | 1-11. For Rehabs, investigate for mold and mildew prior to and during remodel. Remediate/repair as appropriate. |
| <input type="checkbox"/> | <input type="checkbox"/> | 1-12. Evaluate life cycle cost benefits. |
| <input type="checkbox"/> | <input type="checkbox"/> | 1-13. Provide permanent interpretive signs highlighting key environmental and other features. |
| Construction Documents | | |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 1-14. Essential: Reflect sustainability plan in your contract documents and project management. |

Close-Out

| NEW | REHAB | ACTION ITEM |
|-------------------------------------|-------------------------------------|--|
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 1-15. Essential: Reflect sustainability goals in O&M Manual. |
| <input type="checkbox"/> | <input type="checkbox"/> | 1-16. Air out the building prior to occupancy. At least 2 weeks prior to occupancy restrict all use of toxic solvents, paints, etc. and for final cleaning use only low-toxic, non-toxic and environmentally benign maintenance materials and practices. ★4-2, 4-23 |
| <input type="checkbox"/> | <input type="checkbox"/> | 1-17. Conduct owner orientation/operation walk-through. |
| <input type="checkbox"/> | <input type="checkbox"/> | 1-18. Conduct 3rd party verification/certification that sustainable products and practices were used in the project. ★3-3 |

Chapter 2 Site & Water

Site Management

- ☒ ☒ 2-1. **Essential:** Complete a comprehensive site inventory.
- ☒ ☒ 2-2. **Essential:** Perform level 1 site assessment to determine soil conditions and previous uses of site.
- ☐ ☐ 2-3. Perform level 2 site assessment for a more comprehensive geotechnical soil survey.
- ☐ ☐ 2-4. Preserve existing trees and shrubs on site, including street trees.
★2-4

Surface Water

- ☒ ☒ 2-5. **Essential:** Manage surface water. Minimum requirement is to design on-site stormwater facilities to City of Seattle's stormwater specifications.
★2-8, 2-12, 2-16 (possibly 2-18, 2-19)
- ☒ ☒ 2-6. **Essential:** Provide erosion and sedimentation control during construction and minimize site disturbance. Design site erosion control plan to City of Seattle's erosion control specifications.
★2-3, 2-8, 2-9, 2-10, 2-22 (possibly 2-21 through 2-39)

Landscape/Irrigation

- ☒ ☒ 2-7. **Essential:** Avoid herbicides and pesticides during site prep. Select least toxic natural products.
★2-33
- ☒ ☒ 2-8. **Essential:** Incorporate sustainable principles in landscape plan.
★6-3
- ☒ ☒ 2-9. **Essential:** Install landscape plan that incorporates sustainable principles.
★6-7, 6-8, 6-9

SUSTAINABILITY PLAN TEMPLATE - CHECK LIST

| NEW | REHAB | ACTION ITEM |
|-------------------------------------|-------------------------------------|---|
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 2-10. Essential: In new construction and when replacing existing landscaping, use native and drought tolerant plants and trees for landscaping, except for edible landscaping. Limit lawn to play and recreational areas. ★6-10 |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 2-11. Essential: If irrigating with potable water, install high efficiency drip irrigation system. ★6-11 |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 2-12. Essential: Clearly label all storm sewer inlets to inform residents about proper surface water protection. |
| <input type="checkbox"/> | <input type="checkbox"/> | 2-13. Specify and install permeable surfaces and paving in low traffic areas (fire access, overflow parking, patios, driveways, pathways, etc.). ★2-17 |
| <input type="checkbox"/> | <input type="checkbox"/> | 2-14. Install rainwater catchment system for non-potable water reuse. ★6-13 |
| <input type="checkbox"/> | <input type="checkbox"/> | 2-15. Evaluate use of greywater for irrigation. ★6-12, 6-15 |
| Indoor Water Conservation | | |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 2-16. Essential: Install water conserving plumbing fixtures: 1.6 gpf toilets, 1.0 gpf urinals, 2.0 gpm showerheads or better & 1.0 gpm faucet aerators. Option for urinals: waterless type. ★6-16, 6-17, 6-18 |
| <input type="checkbox"/> | <input type="checkbox"/> | 2-17. Install water conserving appliances: Energy Star® or front-loading (horizontal or H-axis) clothes washers and energy efficient or Energy Star® dishwashing machines. ★6-43, 6-44 |
| Design | | |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 2-18. Essential: Design exterior to properly drain water away from the buildings including patios, decks, window sills, and thresholds. ★4-25, 4-28, 4-29 |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 2-19. Essential: Provide secure bicycle parking. ★6-27 |
| <input type="checkbox"/> | <input type="checkbox"/> | 2-20. Provide pedestrian-friendly-design amenities. |
| <input type="checkbox"/> | <input type="checkbox"/> | 2-21. Provide on-site transportation shelters OR create easy access to existing public transportation options/facilities. ★6-28 |
| <input type="checkbox"/> | <input type="checkbox"/> | 2-22. Size parking capacity to meet minimum local zoning requirements. |
| <input type="checkbox"/> | <input type="checkbox"/> | 2-23. On larger projects with internal streets, install traffic calming devices, such as curb bulbs. |

SUSTAINABILITY PLAN TEMPLATE - CHECK LIST

| Chapter 3 Energy Efficiency | | |
|-------------------------------------|-------------------------------------|--|
| Building Envelope & Air Sealing | | |
| NEW | REHAB | ACTION ITEM |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 3-1. Essential: Document envelope improvements of at least 10% beyond code. ★3-1 |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 3-2. Essential: Flash and seal all penetrations between interior spaces and outside. Seal all penetrations for ducting, wiring, plumbing, lights and fans. ★3-5, 3-23 |
| <input type="checkbox"/> | <input type="checkbox"/> | 3-3. Upgrade energy performance of concrete slab on grade. ★3-1 |
| <input type="checkbox"/> | <input type="checkbox"/> | 3-4. Upgrade energy performance of windows and doors. ★3-1 |
| <input type="checkbox"/> | <input type="checkbox"/> | 3-5. Perform blower door test to determine cost-effective air sealing and combustion safety for sample units(s). ★3-8 |
| <input type="checkbox"/> | <input type="checkbox"/> | 3-6. Perform duct leakage test to determine cost-effective air sealing and combustion safety for sample units(s). ★3-24 |
| <input type="checkbox"/> | <input type="checkbox"/> | 3-7. Upgrade energy performance of ceiling and walls. ★3-9, 3-10, 3-11, 3-12, 3-14, 3-15 |
| <input type="checkbox"/> | <input type="checkbox"/> | 3-8. Specify and install insulated concrete forms. ★3-6 |
| Mechanical/Equipment | | |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 3-9. Essential: Heating Systems—Compare two or more systems from the list (see text, Chapter 3) by completing a Life Cycle Cost Analysis. |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 3-10. Essential: Heating Controls—Install accurate thermostats throughout. Specify a product that provides highly accurate thermostatic control over the heating system of plus or minus 2 degrees F. ★3-26, 3-27, 3-29 |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 3-11. Essential: Delivery System—If installing ductwork, install inside conditioned space and seal ductwork in crawls and attics with mastic. When installed outside conditioned space, insulate to wall insulation standard or higher. Design short runs. Use flex only for straight runs; otherwise use metal. ★3-23, 3-25 |

SUSTAINABILITY PLAN TEMPLATE - CHECK LIST

| NEW | REHAB | ACTION ITEM |
|--|-------------------------------------|---|
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 3-12. Essential: Install high-energy factor water heater (minimum = 0.64 for gas, 0.93 for electric). Option for gas water heater to go to 0.83. ★6-37, 6-38, 6-39 |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 3-13. Essential: Insulate bottom of hot water tank. Insulate hot water pipes in unconditioned spaces. ★3-32 |
| <input type="checkbox"/> | <input type="checkbox"/> | 3-14. Install instant (tankless) hot water systems where appropriate to achieve energy savings. ★6-36 |
| <input type="checkbox"/> | <input type="checkbox"/> | 3-15. Install energy-efficient elevators. |
| Electrical, Lighting & Appliances | | |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 3-16. Essential: Specify and install efficient outdoor lighting (30 lumens per watt or better) with low temperature ballasts. Install lamps with automated controls, including but not limited to photo sensors, timers and motion control sensors. ★3-37, 3-39, 3-40, 3-42 |
| <input type="checkbox"/> | <input type="checkbox"/> | 3-17. Specify and install Energy Star® lighting fixtures, lighting systems and appliances. ★3-37, 3-38, 3-39, 3-40, 6-31, 6-43, 6-44, 6-45 |
| <input type="checkbox"/> | <input type="checkbox"/> | 3-18. Install solar water heating system for common hot water heating. ★3-46 |
| <input type="checkbox"/> | <input type="checkbox"/> | 3-19. Provide solar site lighting for walkways or outdoor area lighting. ★3-43 |
| Design | | |
| <input type="checkbox"/> | <input type="checkbox"/> | 3-20. Daylight interior. ★3-35, 3-36 |
| Innovation | | |
| <input type="checkbox"/> | <input type="checkbox"/> | 3-21. Purchase Green Power. |

SUSTAINABILITY PLAN TEMPLATE - CHECK LIST

Chapter 4 Health & Indoor Air Quality

Materials

| NEW | REHAB | ACTION ITEM |
|-------------------------------------|-------------------------------------|---|
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 4-1. Essential: Use least-toxic, decay-resistant, outdoor building materials. No CCA (Chromated Copper Arsenic). ★5-80, 5-81 |
| | <input checked="" type="checkbox"/> | 4-2. Essential: For Rehabs, provide a lead-safe environment. |
| <input type="checkbox"/> | <input type="checkbox"/> | 4-3. Install urea-formaldehyde free underlayment, cabinets and storage units. ★4-18, 4-19 |
| <input type="checkbox"/> | <input type="checkbox"/> | 4-4. Specify <i>low-toxic</i> , solvent-free, no-VOC (volatile organic compound) or low-VOC (below 100 g/liter) paints and primers. Specify water-based wood finishes and stains. ★4-23 |
| <input type="checkbox"/> | <input type="checkbox"/> | 4-5. Specify low-toxic, low-VOC adhesives and sealants. ★4-17 |
| <input type="checkbox"/> | <input type="checkbox"/> | 4-6. Avoid carpets on slab-on-grade. ★4-12 |
| <input type="checkbox"/> | <input type="checkbox"/> | 4-7. Install hard surfaces in living rooms and sleeping areas. ★4-14 |
| <input type="checkbox"/> | <input type="checkbox"/> | 4-8. If using carpet, install Carpet and Rug Institute's CRI IAQ label and low pile or less allergen-attracting carpet and pad. Install carpet by tacking (no glue) and limit use to one-third of the unit's square footage. ★4-10, 4-11, 4-13, 4-15 |
| <input type="checkbox"/> | <input type="checkbox"/> | 4-9. Ensure proper installation of under-slab vapor barriers. ★4-27 |

Fresh Air Ventilation

| | | |
|-------------------------------------|-------------------------------------|---|
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 4-10. Essential: Provide make-up air. ★4-37 |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 4-11. Essential: At a minimum install medium-efficiency air filters in ducted forced air systems. Option: Use "washable" type air filter. ★4-40 |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 4-12. Essential: Install kitchen range hood, bath, laundry or ceiling exhaust fan vented to the outside to remove excess moisture and odors OR install multi-port attic fan to exhaust kitchen, laundry and bathroom. ★4-48 |
| <input type="checkbox"/> | <input type="checkbox"/> | 4-13. Provide for whole house ventilation with controlled supply and exhaust providing maximum Air Changes per Hour (ACH) for 24 hours per day as required by code. |

SUSTAINABILITY PLAN TEMPLATE - CHECK LIST

| NEW | REHAB | ACTION ITEM |
|---|-------------------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | 4-14. Flush out building prior to occupancy with fresh outdoor air. ★4-5, 4-6, 5-5 |
| <input type="checkbox"/> | <input type="checkbox"/> | 4-15. Use operable windows for cross ventilation in combination with mechanical ventilation systems to assure good air flow and ample fresh air for building occupants. ★4-37, 4-43 |
| Education | | |
| <input type="checkbox"/> | <input type="checkbox"/> | 4-16. Implement a "No Smoking" policy for common areas. Consider designating smoking and non-smoking units, floors or buildings. |
| <input type="checkbox"/> | <input type="checkbox"/> | 4-17. Educate residents on ways to maintain good indoor air quality including minimizing and treating mold, reducing track-in of dirt and the importance of using mechanical ventilation properly. |
| Chapter 5 - Materials Efficiency | | |
| Waste Management & Recycling | | |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 5-1. Essential: Develop and implement a waste minimization plan, establishing targets for demolition and construction waste recycling by types of materials. (Goal: 80% total waste reuse and recycling by weight.) ★5-18, 5-19 through 5-30 |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 5-2. Essential: Require subcontractors to participate in waste minimization efforts. ★5-8, 5-24 |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 5-3. Essential: Include Seattle/King County's Construction Recycling Directory and the Contractor's Guide as part of the bid package. |
| <input type="checkbox"/> | <input type="checkbox"/> | 5-4. Reuse and recycle parts or all of existing building during renovation or redevelopment. Install used/salvaged building materials where appropriate. ★5-9 through 5-17 |
| <input type="checkbox"/> | <input type="checkbox"/> | 5-5. Use suppliers who offer reusable or recyclable packaging. ★5-4 |
| Foundation | | |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 5-6. Essential: Specify cast-in-place concrete mix with minimum 25% fly ash substitution for Portland cement. Preferred 50%. ★5-47 |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 5-7. Essential: Specify recycled aggregate base. ★5-48 |

SUSTAINABILITY PLAN TEMPLATE - CHECK LIST

| Framing | | |
|-------------------------------------|-------------------------------------|--|
| NEW | REHAB | ACTION ITEM |
| <input type="checkbox"/> | <input type="checkbox"/> | 5-8. Use efficient structural systems, such as Advanced Framing, engineered structural lumber, etc. ★5-36 through 5-43 |
| <input type="checkbox"/> | <input type="checkbox"/> | 5-9. Specify 3rd-party certified sustainably harvested framing. Do not specify old growth lumber, other than "recovered" or "salvaged" materials. ★5-44, 5-45 |
| Roof & Skin | | |
| <input type="checkbox"/> | <input type="checkbox"/> | 5-10. Select durable and recyclable roofing and siding materials. ★5-63, 5-66, 5-74, 5-75, 5-76 |
| <input type="checkbox"/> | <input type="checkbox"/> | 5-11. Use recycled-content insulation (e.g. cellulose insulation.) ★5-77 |
| Interior Finishes | | |
| <input type="checkbox"/> | <input type="checkbox"/> | 5-12. When suspended ceiling panels are specified, install recycled-content acoustical ceiling tiles. |
| <input type="checkbox"/> | <input type="checkbox"/> | 5-13. Specify 3rd-party certified sustainably-harvested finish woodwork. ★5-71, 5-72 |
| <input type="checkbox"/> | <input type="checkbox"/> | 5-14. Specify recycled-content drywall. Install hard surface drywall in high-wear areas. ★5-58 |
| <input type="checkbox"/> | <input type="checkbox"/> | 5-15. Install alternative to sheet vinyl for kitchens and bathrooms. Other flooring choices include natural linoleum, tile and vinyl composition tile (VCT) with recycled-content. ★5-53, 5-56, 5-57 |
| Chapter 6 Operations & Maintenance | | |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 6-1. Essential: Prepare a plan for annual scheduled maintenance of all aspects of the building and site, including but not limited to, building envelope, roof, vents, filters, plumbing, combustion equipment and landscaping. ★6-2 |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 6-2. Essential: Prepare a sustainable landscape O&M plan. ★6-3 |

SUSTAINABILITY PLAN TEMPLATE - CHECKLIST

| NEW | REHAB | ACTION ITEM |
|-------------------------------------|-------------------------------------|---|
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 6-3. Essential: Provide adequate space and convenient placement of resident recycling. Develop recycling and disposal procedures for staff. ★6-50, 6-51 |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 6-4. Essential: Design properly ventilated separate storage area for maintenance supplies and paints. ★6-46 |
| <input type="checkbox"/> | <input type="checkbox"/> | 6-5. Develop a tenant manual to provide guidance on living in a residence that incorporates green or sustainable features. ★6-1 |
| <input type="checkbox"/> | <input type="checkbox"/> | 6-6. Incorporate a garbage disposal plan in the building/site design. |
| <input type="checkbox"/> | <input type="checkbox"/> | 6-7. Provide training for O&M staff. ★6-4 |